

REMARKS

In amended Fig. 1, all of the blank boxes shown have been specifically labeled as to their respective function. Applicants submit that such corrections address all of the Examiner's drawing concerns as noted in paragraph 1 of the Office Action such that the objection to the drawings under 37 CFR §1.83(a) has now been obviated.

Claims 6-10 remain in this application. Claims 1-5 were previously canceled. Each of claims 6-10 have been amended, primarily for grammatical and clarification purposes. Applicants further note that the Examiner has acknowledged that claims 8 and 9 are directed to allowable subject matter.

The Examiner rejected, in particular, independent claim 6 of the present application under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,723,216 to Premierlani in view of U. S. Patent No. 5,165,051 to Kumar. To summarize, the Examiner indicated that the Premierlani reference discloses the method for determining an amplitude and phase angle of a measuring signal as claimed in independent claim 6 of the present application, but that it did not disclose the use of a recursive nonlinear least-squares estimation method. However, the Examiner then reasoned that since the Kumar reference teaches a recursive nonlinear least squares estimation method, it would have been obvious to one having ordinary skill in the art at the time the present invention was made to modify Premierlani's method to include such a recursive nonlinear least-squares estimation method as taught by Kumar so as to minimize computational requirements as per the present invention.

Applicants respectfully submit that, first of all, the Premierlani patent fails as a primary reference for the §103 rejection. Moreover, Applicants further submit that the Kumar reference does not, in fact, teach or suggest the inventive nonlinear least-squares algorithm as claimed, for example, in independent claim 6.

Specifically, Applicants note that Premierlani discloses a method whereby *either* the amplitude *or* the phase angle of an input signal can be determined by an optimal mean square estimation analysis. Such disclosure can be found, for example, in Column 4, lines 30-32 of the Premierlani reference as even cited by the Examiner. Quite simply, Applicants respectfully submit that the Premierlani reference does not teach or suggest a method for simultaneously determining the frequency, the amplitude *and* the phase angle of a measuring signal.

In addition, Applicants respectfully submit that the Kumar reference does not teach or suggest the use of a recursive nonlinear least-squares estimation method to determine the aforementioned frequency, amplitude and phase angle. Indeed, Kumar merely discloses a *standard* recursive least-squares algorithm (see, e.g., Column 11, line 42).

Applicants respectfully submit that only through the use of the inventive model of the measuring signal contained in the sinusoidal component in accordance with the particularly claimed equation, along with the sampled values obtained, is it possible to determine, via the claimed recursive nonlinear least-squares estimation method, the model frequency parameter, the model amplitude parameter and the model phase angle parameter. The significant advantage of the claimed method is that the sampled values of the measuring signal are used to determine the frequency, amplitude and phase angles in a measured-value processing process. As such, the amplitude, phase angle and frequency of the measuring signal are associated with the same point in time.

In light of the above, Applicants respectfully submit that independent claim 6 of the present application, as amended, as well as claims 7-10 which respectively depend therefrom, are not taught or suggested by the cited prior art. Accordingly, Applicants respectfully request that a timely Notice of Allowance be issued in this case.

It is further submitted that no fees are due in connection with this Response at this time. However, if any fees are due in connection with this application as a whole, the Examiner is authorized to deduct said fees from Deposit Account No.: 02-1818. If such a deduction is made, please indicate the attorney docket number (0112740-353) on the account statement.

Respectfully submitted,

BELL, BOYD & LLOYD LLC

BY 

William E. Vaughan

Reg. No. 39,056

P.O. Box 1135

Chicago, Illinois 60690-1135

Phone: (312) 807-4292

Dated: November 20, 2003